

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	§	
Frederick S. Kauffman	§	Group Art No. 2161
	§	
Serial No.: 10/735,954	§	
	§	
Filed: December 15, 2003	§	Examiner: Stace, Brent S.
	§	
For: Row Triggers	§	
	§	
	§	Attorney Docket No.: 11223

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37 CFR 1.8

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 Howard L. Speight

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Dear Sir:

APPELLANT'S APPEAL BRIEF (37 C.F.R. § 41.37)

This brief is submitted in support of Appellant's notice of appeal from the Final Office Action mailed November 3, 2006 and in response to the Notice of Panel Decision from Pre-Appeal Brief Review mailed February 9, 2007. The time period for filing an appeal brief expires on April 2, 2006. Therefore, this Appeal Brief is timely filed.

The Commissioner is hereby authorized to debit the \$500 fee associated with filing this Appeal Brief, pursuant to 37 C.F.R. § 41.20(b)(2), from deposit account number 14-0225, Order Number 11223.

The Commissioner is hereby authorized to credit overpayments or charge any additional fees set forth in 37 CFR §§ 1.16 through 1.18, and 37 CFR 41.20 to Deposit Account No. 14-0225.

REAL PARTY IN INTEREST

The real party in interest is:

NCR Corporation
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Dayton, Ohio 45479

by virtue of an assignment by the inventors as duly recorded in the Assignment Branch of the U.S. Patent and Trademark Office.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences, to Appellant's knowledge.

STATUS OF CLAIMS

The application as originally filed contained 23 claims. Claim 24-26 were added in a Response to Non-Final Office Action Dated May 31, 2006. Claims 1-26 are pending. Claims 1-26 are appealed.

STATUS OF AMENDMENTS

No amendment has been filed subsequent to final rejection.

SUMMARY OF THE CLAIMED SUBJECT MATTER

Claim 1 features a method for processing a trigger associated with a subject table in a relational database. The trigger defines a triggering statement and one or more triggered actions. Fig. 5, element 510; page 6, lines 10-15. The method includes determining that a triggering statement of a trigger will execute on a subject table row of a subject table. Fig. 5, element 510; page 6, lines 10-15. The method further includes requesting a transition table in response to determining that the triggering statement will execute. Fig. 5, elements 520 and 530; page 6, line 16- page 7, line 2; page 12, line 29 – page 13, line 1; page 13, lines 3-4. The transition table includes a transition table row. Page 7, lines 21-26; page 13, lines 1-3. The transition table row includes at least one value associated with the subject table row. Page 7, lines 21-26; page 13, lines 1-3. The method includes reading the transition table row from the transition table. Fig. 8, element 820; page 8, lines 1-6; page 13, lines 1-5. The method includes identifying a processing

unit to receive the transition table row and a triggered action of the trigger based on an association between the identified processing unit and a portion of memory. Fig. 8, element 830; page 8, lines 7-11; page 13, lines 18-20. The method includes transmitting the transition table row and the triggered action to the identified processing unit to be processed. Fig. 8, element 840; page 8, lines 12-13; page 13, lines 20-21.

Claim 4 features a method for processing a trigger associated with a subject table in a relational database. The trigger defines a triggering statement and one or more triggered actions. Page 6, lines 10-15. The method includes determining that a triggering statement of a trigger will execute on a subject table row of a subject table. Fig. 9, element 910; page 9, lines 8-11. The method includes instructing a first processing unit, in response to determining that the triggering statement of the trigger will execute, to communicate a transition table row to a second processing unit. Fig. 9, element 940; page 9, lines 17-22. The transition table row includes at least one value associated with the subject table row. Page 7, lines 21-26. The method includes transmitting a triggered action of the trigger to the second processing unit to be processed using the transition table row. Page 10, lines 15-16.

Claim 7 features a method for processing a trigger associated with a subject table in a database. The method includes receiving a triggering statement of a trigger to be executed on a subject table row of a subject table and information identifying a processing unit. Fig. 7, element 710; page 7, lines 13-5; page 12, lines 30-32. The method includes generating a transition table row in response to receiving the triggering statement. Fig. 7, element 730; page 7, line 21; page 12, line 32 – page 13, line 1. The transition table row includes at least one value associated with the subject table row. Page 7, lines 21-26; page 13, lines 1-3. The method includes transmitting the transition table row to the processing unit. Fig. 7, element 740; page 7, lines 26-27; page 13, line 4.

Claim 9 features a method for processing a trigger associated with a subject table in a database. The method includes receiving a transition table row. Fig. 12, element 1210; page 10, lines 18-20. The transition table row includes at least one value associated with the subject table row. Page 7, lines 21-26. The method includes storing the transition table row in a memory. Fig. 12, element 1220; page 10, lines 20-22. The method includes receiving a triggered action of a trigger associated with a subject table and information identifying the transition table row. Fig. 12, element 1230; page 10, lines 23-25. The method includes reading the transition table row

from the memory based on the information identifying the transition table row. Fig. 12, element 1250; page 10, line 27 – page 11, line 6. The method includes processing the triggered action based on the transition table row. Fig. 12, element 1280; page 11, lines 7-8.

Claim 11 features a computer program, stored on a tangible storage medium, for use in processing a trigger associated with a subject table in a relational database. The program includes executable instructions that cause a computer to determine that a triggering statement of a trigger will execute on a subject table row of a subject table. Fig. 5, element 510; page 6, lines 10-15. The program includes executable instructions that cause a computer to request a transition table in response to determining that the triggering statement will execute. Fig. 5, elements 520 and 530; page 6, line 16- page 7, line 2; page 12, line 29 – page 13, line 1; page 13, lines 3-4. The transition table includes a transition table row. Page 7, lines 21-26; page 13, lines 1-3. The transition table row includes at least one value associated with the subject table row. Page 7, lines 21-26; page 13, lines 1-3. The program includes executable instructions that cause a computer to read the transition table row from the transition table. Fig. 8, element 820; page 8, lines 1-6; page 13, lines 1-5. The program includes executable instructions that cause a computer to identify a processing unit to receive the transition table row and a triggered action of the trigger based on an association between the identified processing unit and a portion of memory. Fig. 8, element 830; page 8, lines 7-11; page 13, lines 18-20. The program includes executable instructions that cause a computer to transmit the transition table row and the triggered action to the identified processing unit to be processed. Fig. 8, element 840; page 8, lines 12-13; page 13, lines 20-21.

Claim 14 features a computer program, stored on a tangible storage medium, for use in processing a trigger associated with a subject table in a relational database. The program includes executable instructions that cause a computer to determine that a triggering statement of a trigger will execute on a subject table row of a subject table. Fig. 9, element 910; page 9, lines 8-11. The program includes executable instructions that cause a computer to instruct a first processing unit, in response to determining that the triggering statement of the trigger will execute, to communicate a transition table row to a second processing unit. Fig. 9, element 940; page 9, lines 17-22. The transition table row includes at least one value associated with the subject table row. Page 7, lines 21-26. The program includes executable instructions that cause a

computer to transmit a triggered action of the trigger to the second processing unit to be processed using the transition table row. Page 10, lines 15-16.

Claim 17 features a computer program, stored on a tangible storage medium, for use in processing a trigger associated with a subject table in a relational database. The program includes executable instructions that cause a computer to receive a triggering statement of a trigger to be executed on a subject table row of a subject table and information identifying a processing unit. Fig. 7, element 710; page 7, lines 13-5; page 12, lines 30-32. The program includes executable instructions that cause a computer to generate a transition table row in response to receiving the triggering statement. Fig. 7, element 730; page 7, line 21; page 12, line 32 – page 13, line 1. The transition table row includes at least one value associated with the subject table row. Page 7, lines 21-26; page 13, lines 1-3. The program includes executable instructions that cause a computer to transmit the transition table row to the processing unit. Fig. 7, element 740; page 7, lines 26-27; page 13, line 4.

Claim 19 features a computer program, stored on a tangible storage medium, for use in processing a trigger associated with a subject table in a relational database. The program includes executable instructions that cause a computer to receive a transition table row. Fig. 12, element 1210; page 10, lines 18-20. The transition table row includes at least one value associated with the subject table row. Page 7, lines 21-26. The program includes executable instructions that cause a computer to store the transition table row in a memory. Fig. 12, element 1220; page 10, lines 20-22. The program includes executable instructions that cause a computer to receive a triggered action of a trigger associated with a subject table and information identifying the transition table row. Fig. 12, element 1230; page 10, lines 23-25. The program includes executable instructions that cause a computer to read the transition table row from the memory based on the information identifying the transition table row. Fig. 12, element 1250; page 10, line 27 – page 11, line 6. The program includes executable instructions that cause a computer to process the triggered action based on the transition table row. Fig. 12, element 1280; page 11, lines 7-8.

Figure 21 features a database system including a massively parallel processing system. Fig. 1, element 100; page 4, lines 14-16. The massively parallel processing system includes one or more nodes, Fig. 1, elements 105_{1...N}; page 4, line 17, a plurality of CPUs, Fig. 1, elements 110_{1...N}, page 4, lines 17-21, each of the one or more nodes providing access to one or more

CPUs, a plurality of data storage facilities, Fig. 1, elements 1201...N, page 7, lines 17-21, each of the one or more CPUs providing access to one or more data storage facilities, and a process for processing a trigger associated with a subject table in a relational database residing on the one or more data storage facilities. Figs. 4-12; page 6, line 4 – page 4, line 18. The trigger defines a triggering statement and one or more triggered actions. Fig. 5, element 510; page 6, lines 10-15. The process includes determining that a triggering statement of a trigger will execute on a subject table row of a subject table. Fig. 5, element 510; page 6, lines 10-15. The process includes requesting a transition table in response to determining that the triggering statement will execute. Fig. 5, elements 520 and 530; page 6, line 16- page 7, line 2; page 12, line 29 – page 13, line 1; page 13, lines 3-4. The transition table includes a transition table row. Page 7, lines 21-26; page 13, lines 1-3. The transition table row includes at least one value associated with the subject table row. Page 7, lines 21-26; page 13, lines 1-3. The process includes reading the transition table row from the transition table. Fig. 8, element 820; page 8, lines 1-6; page 13, lines 1-5. The process includes identifying a CPU to receive the transition table row and a triggered action of the trigger based on a data storage facility to which the identified CPU provides access. Fig. 8, element 830; page 8, lines 7-11; page 13, lines 18-20. The process includes transmitting the transition table row and the triggered action to the identified CPU to be processed. Fig. 8, element 840; page 8, lines 12-13; page 13, lines 20-21.

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1-26 are patentable because a prima facie case of inherency has not been established regarding elements of United States Patent No. 5,930,795 to Chen et al. (“Chen”).
2. Whether claims 1-3, 11-13, and 21-26 are patentable because Chen fails to disclose identifying a processing unit to receive a transition table row and a triggered action of the trigger based on an association between the processing unit and a portion of memory.
3. Whether claims 4-6 and 14-16 are patentable over Chen because Chen fails to disclose instructing a first processing unit, in response to determining that the triggering statement of the trigger will execute, to communicate a transition table row to a second processing unit, wherein the transition table row comprises at least one value associated with the subject table row.

4. Whether claims 7-8 and 17-18 are patentable over Chen because Chen fails to disclose receiving a triggering statement of a trigger to be executed on a subject table row of a subject table and information identifying a processing unit.

5. Whether claims 9-10 and 19-20 are patentable over Chen because Chen fails to disclose receiving a triggered action of a trigger associated with a subject table and information identifying the transition table row.

ARGUMENT

1. Claims 1-26 are Patentable Because a Prima Facie Case of Inherency Has Not Been Established

In rejecting all of Claims 1-26, the Examiner relies upon allegedly inherent properties of the *Chen* system:

All of the ‘receiving triggered statement’, ‘determining triggered statement’, ‘computer program’, ‘executing triggered statement’ are all [sic] inherent characteristics of any database management system. Without receiving, determining and executing, a triggered statement can’t be processed. Identifying a processor to process an event (e.g., UPDATE, DELETE, etc.) is inherent to a distributed parallel database system, where data is distributed/partitioned among different portions of memory (e.g., different disk), because simply there is no need to access other portions of memory when the other memory portions do not have the corresponding data that needs to be processor. *Final Office Action*, p. 5-6 (emphasis added).

Appellant respectfully submits that the Examiner fails to satisfy the requirements for an inherency finding. Specifically, Appellant notes that “[i]n relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art.” *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). Here the Examiner has merely concluded that elements of a number of different claims are an inherent part of the operation of *Chen* without considering the possibility that alternatives to the relevant claim elements might be used in, what the Examiner labels as, “process[ing]” a triggered statement. *Final Office Action*, p. 5.

In addition, these allegedly inherent properties only result from a hypothetical situation that the Examiner has himself crafted. The Examiner provides a lengthy description of requirements that the Examiner himself concedes must be satisfied for the allegedly inherent

properties to result. Consequently, by the Examiner's own admission, these properties are not inherently part of the teachings of *Chen*. For example, in the text preceding the text quoted above, the Examiner notes that these properties occur only "if Table AB row is divided into disk A (and attached processor A) and disk B (and attached processor B)" and "if...an UPDATE on the table AP row triggers an event." *Final Office Action*, p. 5, emphasis added. While Appellant does not agree that, even under the conditions described by the Examiner, the claimed subject matter necessarily is part of the system described by *Chen* and/or its operation, the Examiner rebuts his own case for inherency by noting that certain conditions not discussed by *Chen* must be satisfied, even in his mind, for the structure and operation of the *Chen* system to inherently anticipate the claimed subject matter.

Furthermore, even ignoring the clearly conditional nature of what the Examiner alleges are inherent aspects of *Chen*, the Examiner's sole explanation for determining that any missing elements of *Chen* are allegedly inherent is simply that "there is no need to access other portions of memory when the other memory portions do not have the corresponding data that needs to be processed." *Final Office Action*, p. 6. Nonetheless, the mere fact that a particular step is not needed in the operation of a disclosed system does not make any and all alternative steps inherent parts of the operation of the disclosed system. The Examiner additionally states that "[i]dentifying a processor is done at the database management system level and not at the user level." *Final Office Action*, p. 6. Appellant respectfully notes however that the Examiner provides absolutely no evidence to support this assertion.

Thus, for at least these reasons, the Examiner fails to present a *prima facie* case of inherency. As a result, the deficiencies of *Chen* previously noted by Appellant are not overcome by the new rejections presented in the Final Office Action. Thus, as noted by Appellant in a Response to Office Action filed August 31, 2006 ("the August 31 Response"), *Chen* fails to recite, expressly or inherently, every element of Claims 1-26 for at least several reasons. Claims 1-26 are thus allowable. Appellant respectfully requests that the rejection of claims 1-26 on this basis be reversed.

2. Claims 1-3, 11-13, and 21-26 are patentable over Chen because Chen fails to disclose identifying a processing unit to receive a transition table row and a triggered action of the trigger based on an association between the processing unit and a portion of memory

Claim 1 is allowable because *Chen* fails to recite every element of Claim 1. For example, as Appellant previously asserted, *Chen* fails to disclose “identifying a processing unit to receive the transition table row and a triggered action of the trigger based on an association between the processing unit and a portion of memory.” *August 31 Response*, p. 11. The portions of *Chen* that the Examiner cited in the *June 7, 2006 Non-Final Office Action* to support the rejection of claim 1 describe techniques for referencing, in the body of coded triggers, table values that are not known at compile-time (col. 3, lines 23-27; col. 5, lines 59-63); making data stored in a database management system (DBMS) accessible to external host language code (col. 5, lines 63-67); creating transition tables in response to a trigger statement (col. 12, lines 25-67; col. 13, lines 1-5); and example code for implementing these described techniques (col. 14, lines 8-50). None of these cited portions address identifying a processing unit to receive the transition table row and a triggered action of the trigger based on an association between the processing unit and a portion of memory, as required by claim 1.

Thus, notwithstanding the Examiner’s arguments, *Chen* fails to recite every element of Claim 1, and Claim 1 is thus allowable for at least this reason. Although of differing scope from Claim 1, Claims 11 and 21 include elements that, for reasons substantially similar to those discussed with respect to Claim 1, are not disclosed by *Chen*. As a result, Appellant respectfully requests that the rejection of Claims 1, 11, and 21, and their respective dependents be reversed.

3. Claims 4-6 and 14-16 are patentable over Chen because Chen fails to disclose instructing a first processing unit, in response to determining that the triggering statement of the trigger will execute, to communicate a transition table row to a second processing unit, wherein the transition table row comprises at least one value associated with the subject table row

As Appellant has previously noted (*August 31 Response*, p. 12), the Examiner fails to specifically address the individual limitations of Claim 4, instead basing the rejection of Claim 4 on the language of Claim 1. Appellant respectfully notes that “[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art.” M.P.E.P. § 2143.03. Moreover, *Chen* fails to recite, expressly or inherently, every element of Claim 4. As one example, *Chen* fails to disclose “instructing a first processing unit, in response to determining

that the triggering statement of the trigger will execute, to communicate a transition table row to a second processing unit, wherein the transition table row comprises at least one value associated with the subject table row” as recited by Claim 4. Claim 4 is thus allowable for at least this reason. Although of differing scope from Claim 4, Claim 14 includes elements that, for reasons substantially similar to those discussed with respect to Claim 4, are not disclosed by *Chen*. As a result, Appellant respectfully requests that the rejection of Claims 4 and 14, and their respective dependents be reversed.

4. Claims 7-8 and 17-18 are patentable over Chen because Chen fails to disclose receiving a triggering statement of a trigger to be executed on a subject table row of a subject table and information identifying a processing unit

As Appellant has previously noted (*August 31 Response*, p. 12), the Examiner also fails to specifically address the individual limitations of Claim 7, contrary to M.P.E.P. § 2143.03. Moreover, Chen fails to recite, expressly or inherently, every element of Claim 7. As one example, Chen fails to disclose “receiving a triggering statement of a trigger to be executed on a subject table row of a subject table and information identifying a processing unit” (emphasis and underlining added) as recited by Claim 7. Claim 7 is thus allowable for at least this reason. Although of differing scope from Claim 7, Claim 17 includes elements that, for reasons substantially similar to those discussed with respect to Claim 7, are not disclosed by *Chen*. As a result, Appellant respectfully requests that the rejection of Claims 7 and 17, and their respective dependents be reversed.

5. Claims 9-10 and 19-20 are patentable over Chen because Chen fails to disclose receiving a triggered action of a trigger associated with a subject table and information identifying the transition table row

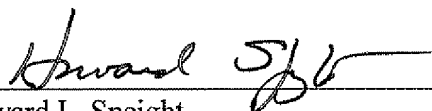
As Appellant has previously noted (*August 31 Response*, p. 13), the Examiner also fails to address the individual limitations of Claim 9, contrary to M.P.E.P. § 2143.03. Chen fails to recite, expressly or inherently, every element of Claim 9. As one example, Chen fails to disclose “receiving a triggered action of a trigger associated with a subject table and information identifying the transition table row” (emphasis added) as recited by Claim 9. Claim 9 is thus allowable for at least this reason. Although of differing scope from Claim 9, Claim 19 includes elements that, for reasons substantially similar to those discussed with respect to Claim 9 are not disclosed by *Chen*. As a result, Appellant respectfully requests that the rejection of Claims 9 and 19, and their respective dependents be reversed.

Summary

In light of the foregoing, Appellant respectfully requests that the final rejection of the pending claims should be reversed and the application be remanded for allowance of the pending claims, or, alternatively, that the application be remanded for further examination if appropriate references can be found by the examiner.

Please debit the \$500 fee associated with filing this Appeal Brief from deposit account number 14-0225, Order Number 11223.

Respectfully submitted,



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Date: April 2, 2007

CLAIMS APPENDIX

1. A method for processing a trigger associated with a subject table in a relational database, wherein the trigger defines a triggering statement and one or more triggered actions, the method including:

determining that a triggering statement of a trigger will execute on a subject table row of a subject table;

requesting a transition table in response to determining that the triggering statement will execute, the transition table including a transition table row, wherein the transition table row comprises at least one value associated with the subject table row;

reading the transition table row from the transition table;

identifying a processing unit to receive the transition table row and a triggered action of the trigger based on an association between the identified processing unit and a portion of memory; and

transmitting the transition table row and the triggered action to the identified processing unit to be processed.

2. The method of Claim 1, wherein the triggering statement comprises one of an UPDATE, INSERT, INSERT/SELECT, and DELETE statement to be executed on the subject table.

3. The method of Claim 1, wherein the triggered action comprises a first triggered action of the trigger and a second triggered action of the trigger, and transmitting the transition table row comprises transmitting the transition table row, the first triggered action, and the second triggered action to the processing unit to be processed.

4. A method for processing a trigger associated with a subject table in a relational database, wherein the trigger defines a triggering statement and one or more triggered actions, the method including:

determining that a triggering statement of a trigger will execute on a subject table row of a subject table;

instructing a first processing unit, in response to determining that the triggering statement of the trigger will execute, to communicate a transition table row to a second processing unit, wherein the transition table row comprises at least one value associated with the subject table row;

transmitting a triggered action of the trigger to the second processing unit to be processed using the transition table row.

5. The method of Claim 4, wherein the triggering statement comprises one of an UPDATE, INSERT, INSERT/SELECT, and DELETE statement to be executed on the subject table.

6. The method of Claim 4, further comprising:

instructing the first processing unit, in response to determining that the triggering statement of the trigger will execute, to communicate a second transition table row to a third processing unit, wherein the second transition table row comprises the at least one value associated with the subject table row; and

transmitting a second triggered action of the trigger to the third processing unit to be processed using the second transition table row.

7. A method for processing a trigger associated with a subject table in a database comprising:

receiving a triggering statement of a trigger to be executed on a subject table row of a subject table and information identifying a processing unit;

generating a transition table row in response to receiving the triggering statement, wherein the transition table row comprises at least one value associated with the subject table row;

transmitting the transition table row to the processing unit.

8. The method of Claim 7, wherein generating a transition table row comprises:

determining the original value of the subject table row;

applying the triggering statement to the subject table row;

determining the new value of the subject table row; and

generating a transition table row, wherein the transition table row comprises the original value and the new value.

9. A method for processing a trigger associated with a subject table in a database comprising:

receiving a transition table row, wherein the transition table row comprises at least one value associated with the subject table row;

storing the transition table row in a memory;

receiving a triggered action of a trigger associated with a subject table and information identifying the transition table row;

reading the transition table row from the memory based on the information identifying the transition table row; and

processing the triggered action based on the transition table row.

10. The method of Claim 9, wherein processing the triggered action comprises:

determining whether the transition table row satisfies a trigger condition of the trigger;

and

processing the triggered action if the transition table row satisfies the trigger condition.

11. A computer program, stored on a tangible storage medium, for use in processing a trigger associated with a subject table in a relational database, the program including executable instructions that cause a computer to:

determine that a triggering statement of a trigger will execute on a subject table row of a subject table;

request a transition table in response to determining that the triggering statement will execute, the transition table including a transition table row, the transition table row comprising at least one value associated with the subject table row;

read the transition table row from the transition table;

identify a processing unit to receive the transition table row and a triggered action of the trigger based on an association between the identified processing unit and a portion of memory; and

transmit the transition table row and the triggered action to the identified processing unit to be processed.

12. The computer program of claim 11, wherein the triggering statement comprises one of an UPDATE, INSERT, INSERT/SELECT, and DELETE statement to be executed on the subject table.

13. The computer program of Claim 11, wherein the triggered action comprises a first triggered action of the trigger and a second triggered action of the trigger, and wherein the program causes the computer to transmit the transition table row by transmitting the transition table row, the first triggered action, and the second triggered action to the processing unit to be processed.

14. A computer program, stored on a tangible storage medium, for use in processing a trigger associated with a subject table in a relational database, the program including executable instructions that cause a computer to:

determine that a triggering statement of a trigger will execute on a subject table row of a subject table;

instruct a first processing unit, in response to determining that the triggering statement of the trigger will execute, to communicate a transition table row to a second processing unit, wherein the transition table row comprises at least one value associated with the subject table row; and

transmit a triggered action of the trigger to the second processing unit to be processed using the transition table row.

15. The computer program of Claim 14, wherein the triggering statement comprises one of an UPDATE, INSERT, INSERT/SELECT, and DELETE statement to be executed on the subject table.

16. The computer program of Claim 14, further including executable instructions that cause a computer to

instruct the first processing unit, in response to determining that the triggering statement of the trigger will execute, to communicate a second transition table row to a third processing unit, wherein the transition table row comprises a first value associated with the subject table row and a second value associated with the subject table row; and

transmit a second triggered action of the trigger to the third processing unit to be processed using the second transition table row.

17. A computer program, stored on a tangible storage medium, for use in processing a trigger associated with a subject table in a relational database, the program including executable instructions that cause a computer to:

- receive a triggering statement of a trigger to be executed on a subject table row of a subject table and information identifying a processing unit;

- generate a transition table row in response to receiving the triggering statement, wherein the transition table row comprises at least one value associated with the subject table row; and

- transmit the transition table row to the processing unit.

18. The computer program of Claim 17, wherein the executable instructions cause the computer to generate the transition table row by:

- determining the original value of the subject table row;

- applying the triggering statement to the subject table row;

- determining the new value of the subject table row; and

- generating a transition table row, wherein the transition table row comprises the original value and the new value.

19. A computer program, stored on a tangible storage medium, for use in processing a trigger associated with a subject table in a relational database, the program including executable instructions that cause a computer to:

- receive a transition table row, wherein the transition table row comprises at least one value associated with the subject table row;

- store the transition table row in a memory;

- receive a triggered action of a trigger associated with a subject table and information identifying the transition table row;

- read the transition table row from the memory based on the information identifying the transition table row; and

- process the triggered action based on the transition table row.

20. The computer program of Claim 19, wherein the executable instructions cause the computer to process the triggered action by:

determining whether the transition table row satisfies a trigger condition of the trigger;
and
processing the triggered action if the transition table row satisfies the trigger condition.

21. A database system including:

a massively parallel processing system including:

one or more nodes;

a plurality of CPUs, each of the one or more nodes providing access to one or more CPUs;

a plurality of data storage facilities each of the one or more CPUs providing access to one or more data storage facilities; and

a process for processing a trigger associated with a subject table in a relational database residing on the one or more data storage facilities, wherein the trigger defines a triggering statement and one or more triggered actions, the process including:

determining that a triggering statement of a trigger will execute on a subject table row of a subject table;

requesting a transition table in response to determining that the triggering statement will execute, the transition table including a transition table row, wherein the transition table row comprises at least one value associated with the subject table row;

reading the transition table row from the transition table;

identifying a CPU to receive the transition table row and a triggered action of the trigger based on a data storage facility to which the identified CPU provides access; and

transmitting the transition table row and the triggered action to the identified CPU to be processed.

22. The database system of Claim 21, wherein the triggering statement comprises one of an UPDATE, INSERT, INSERT/SELECT, and DELETE statement to be executed on the subject table.

23. The database system of Claim 21, wherein the triggered action comprises a first triggered action and a second triggered action of the trigger, and transmitting the transition table row comprises transmitting the transition table row, the first triggered action, and the second triggered action to the identified CPU to be processed.

24. The method of Claim 1 wherein identifying the processing unit to receive the transition table row and the triggered action comprises identifying the processing unit to receive the transition table row and the triggered action based on an association between the identified processing unit and a portion of memory storing a row of the subject table that is affected by the triggering statement.

25. The computer program of Claim 11, wherein the executable instructions further cause the computer to identify the processing unit to receive the transition table row and the triggered action by identifying the processing unit to receive the transition table row and the triggered action based on an association between the identified processing unit and a portion of memory storing a row of the subject table that is affected by the triggering statement.

26. The database system of Claim 21, wherein the process is further operable to identify the CPU to receive the transition table row and the triggered action by identifying a CPU that provides access to a data storage facility storing a row of the subject table that is affected by the triggering statement.

EVIDENCE APPENDIX

NONE

RELATED PROCEEDINGS APPENDIX

NONE